

Generative artificial intelligence, human creativity, and art

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Abstract

Abstract Recent artificial intelligence (AI) tools have demonstrated the ability to produce outputs traditionally considered creative. One such system is text-to-image generative AI (e.g. Midjourney, Stable Diffusion, DALL-E), which automates humans' artistic execution to generate digital artworks. Utilizing a dataset of over 4 million artworks from more than 50,000 unique users, our research shows that over time, text-to-image AI significantly enhances human creative productivity by 25% and increases the value as measured by the likelihood of receiving a favorite per view by 50%. While peak artwork Content Novelty, defined as focal subject matter and relations, increases over time, average Content Novelty declines, suggesting an expanding but inefficient idea space. Additionally, there is a consistent reduction in both peak and average Visual Novelty, captured by pixel-level stylistic elements. Importantly, AI-assisted artists who can successfully explore more novel ideas, regardless of their prior originality, may produce artworks that their peers evaluate more favorably. Lastly, AI adoption decreased value capture (favorites earned) concentration among adopters. The results suggest that ideation and filtering are likely necessary skills in the text-to-image process, thus giving rise to "generative synesthesia"—the harmonious blending of human exploration and AI exploitation to discover new creative workflows.